#2

A STATUS REPORT

OF

HAWAIIAN HAWK NESTING ACTIVITIES

AT THE

PROPOSED WELL SITE #2

DLNR DESIGNATED GEOTHERMAL RESOURCE SUBZONE
KILAUEA MIDDLE EAST RIFT ZONE
PUNA DISTRICT
ISLAND OF HAWAII

SEPTEMBER 8, 1990

BY

JACK JEFFREY

PREPARED FOR:

TRUE/MID PACIFIC GEOTHERMAL VENTURE

DISCLAIMER

INTRODUCTION

On August 11, 1990 during an ornithological survey at the True/Mid Pacific Geothermal Venture proposed well site #2, a Hawaiian hawk (Buteo solitarius) nest with a nestling was found approximately 430 feet from the proposed well pad clearing. The U.S. Fish and Wildlife Service and the State of Hawaii have listed the Hawaiian hawk as an endangered species. Future development in this area could be impacted by the presence of this endangered avian species and its nest in such close proximity to the proposed well site. This report summarizes the results of observations at the nest on August 12, 19 and 25 and September 2, 1990.

METHODS

Observations of 1 - 3 hours each were made using 8 x 30 Zeiss binoculars from a natural blind approximately 90 feet from the active Hawaiian hawk's nest. Thick staghorn fern and other vegetation kept the observer hidden from view of the nesting hawks. Presence or absence of the nestling in the nest, interactions between adults and the nestling and behaviors of the young bird were noted.

FINDINGS

The nest was found on August 11, 1990 during an initial avian survey of the proposed well site area. The nestling was first heard, then seen calling from a perch approximately 50 feet from the nest.

During the second day of the survey, August 12, the nestling was seen on the nest at which time an adult was observed bringing food to the nestling. During 3 subsequent observation days, totalling nine hours at the nest, no parents were seen. The juvenile hawk was never seen again on the nest after August 12 but was continually observed perched within 50 -100 feet of the nest. A favored perch was 75 feet north of the nest, 35 feet above the ground, on a dead branch in a large ohia tree. The fledgling spent over 50% of the observed time at this perch and divided the remainder of its observed time almost equally among three other perches at 50 - 100 feet from the nest. The fledgling called intermittently with bouts of calling sometimes lasting 8 - 10 minutes and calls 5 - 10 seconds apart. These calls

presumably were made to attract the attention of the adults for feeding.

Numerous helicopter flights over the nest site were noted (1-3 per hour) and generators at the drilling rig 3500 feet away could be heard continuously. The nestling showed no apparent behavioral abnormalities or short-term effects resulting from these low level sounds.

On September 2, 1990 no hawks were seen or heard in the nest area during three hours of observation. The fledgling had most likely left the nest area prior to this date.

DISCUSSION

Although no Hawaiian hawks nests have been previously found in the middle east rift zone, the presence of this nest is not unique as other Hawaiian hawk nests have been found nearby in other parts of the Puna District (Griffin 1985, Jeffrey 1986, Scott et al 1986).

Hawaiian Hawks will nest in a variety of habitats although habitat preferences have not been substantiated. Griffin (1985) noted Hawaiian hawks nesting in marginal forests in or near agricultural areas, in exotic forests as well as in native forests. A preference for large trees to support their relatively large nests was also noted. Numerous large ohia trees for use as possible nest sites plus high density of prey species (small birds) make many of the Puna native forest areas very suitable Hawaiian hawk habitat.

Hawaiian hawks begin breeding in March/April with most eggs hatching in June. Nestlings fledge 8-9 weeks after hatching with most fledging in August but remaining in the natal territory up to a year (Griffin 1985). The age and timing of fledging of the nestling at well site #2 was consistent with this behavior as it had fledged and left the nest area by the end of August.

Human disturbance and habitat destruction are two suspected major causes of historic Hawaiian hawk population decline. These birds are most vulnerable during the nesting period. Human activities very close to the nest and other human disturbances may cause abandonment of eggs or nestlings by the parents (Hawaiian Hawk Recovery Plan, Griffin 1985, Scott et al. 1986).

Noise levels at the nest site were intermittently high. Tour helicopters visiting the most recent Kilauea eruption consistently flew at low altitudes over or near the nest

site. Fly-over rates varied from 1-3 per hour during observation periods. These helicopters most likely have been flying over the nest site prior to and during the occupation of the present nest. Also, drilling operations were underway on August 11, and during other observations. The sounds of generating equipment at the drill rig 3500 feet away were consistantly audible although muffled by distance and forest.

No abnormal behaviors were noted at this nest and it is suspected that the birds had become habituated to these noise conditions. Observations made at two other Hawaiian hawk nests in the Puna area when helicopter activity was present showed short-term agitation and apparent nervousness when over flights were close by. At one nest adjacent to a papaya field (300 feet), bulldozing operations and field workers worked continuously throughout the nesting period causing only minor agitation in the adults and young. Both nests were successful (pers. obs.).

Workers at the drill rig at well site #1 report having seen hawks on many occasions perched in trees at the edge of the well site clearing as well as flying near the rigs during day time drilling operations.

COMMENTS AND RECOMMENDATIONS

Some data indicate that Hawaiian hawks subjected to intermittent low levels of noise and minor disturbances may become sufficiently habituated to these disturbances to be able to produce a successful nest (pers. obs.) Although the effect of long-term high levels of noise and disturbance are not well known, they are suspected of having detrimental impact (i.e. through egg or nestling abandonment.) Griffin 1985 and The Hawaiian Hawk Recovery Plan 1984.)

Hawaiian hawks are known to re-use nests during subsequent nestings but may not nest every year due to the prolonged post-fledgling period (Griffin 1985).

It is recommended that the nest at the proposed well site #2 be monitored during the March/April 1991 breeding period to determine if renesting is occurring. If the nest is reactivated, then noise levels and disturbance should be kept to a minimum at the well site adjacent to the nest until the nestling(s) have fledged. Observations should be made intermittently to determine the nest/nestling status.

Although successful nests have been found in small forested kipukas in agriculturally cleared areas, clearing around active nests is known to cause abandonment (Griffin

1985). It is recommended that a non-cleared forest buffer of at least 400 feet, and more if possible, be maintained around any Hawaiian hawk nests found. This distance should not be construed as an optimal buffer zone. Data are limited and more information is needed before the optimal buffer zone distance can be determined. If the nest is active, clearing or disturbance within 1000 feet should be curtailed or minimized until the nestlings have fledged.

All subsequent proposed well sites should be checked thoroughly for Hawaiian hawk nests. Due to terrain and thick vegetation of the area, it may be close to impossible to find all nests. Surveys made during late July through early August will increase the chances of finding active nests because of the intermittent loud calling of the nestling, keying the observer to the nest position.

Careful planning and cooperation between developers and biologists and appropriate detailed monitoring within the development area will generate data useful for future planning.

LITERATURE CITED

DLNR 1986. Indigenous wildlife, endangered and threatened wildlife and plants, and introduced wild birds. Department of Land and Natural Resources. State of Hawaii, Administrative Rule 28 August 1986.

Griffin, C.R. 1985 Biology of the Hawaiian Hawk Buteo solatarius. Ph. D. Dissertation. University of Missouri, Columbia.

Jeffrey, J. 1986 Hawaiian Hawk Survey in the Pu'u Honuaula Area. Puna Geothermal Power Company Report. 14pp.

Perkins, R.C.L. Notes on collecting in Kona. Pp 120 in Berger A.J. 1988. Hawaiian Birdlife. University of Hawaii Press, Honolulu.

Ramsey, F.L., and J.M. Scott 1981. Estimating population densities from variable circular plot surveys. Pp 155-181 in R.M. Cormack, G.P. Patil and D.S. Robson (eds). Sampling biological populations. Stat. Ecol. Serv., Vol. 5. Co-op. Publ. House, Fairland, MD.

Scott, J.M. and F.L. Ramsey. 1981. Length of count period as a possible source of bias in estimating bird numbers. Pp. 409-413 in C.J. Ralph and J.M. Scott (eds). Estimating numbers of terrestrial birds. Studies in Avian Biology No. 6. Cooper Ornithological Society.

Scott J.M., S. Mountainspring, F.L. Ramsey, and C.B. Kepler 1986. Forest bird communities of the Hawaiian Islands: their dynamics, ecology, and conservation. Studies in Avian Biology No. 9. Cooper Ornithological Society.

Scott, J.M., C.B. Kepler, C. van Riper III, S.I. Fefer 1988. Conservation of Hawaii's vanishing avifauna. Bioscience 38:238-253.

USFWS 1984. Recovery Plan For The Hawaiian Hawk. U.S. Fish and Wildlife Service, Portland, Oregon.